

obtained from desoxybenzoïn, by united oxidation and treatment with alcoholic potash, a peculiar body, $C_{70}H_{60}O_4$, to which he gave the name of *benzamarone*, and which he decomposed into desoxybenzoïn and *amaric acid*, $C_{40}H_{42}O_6$. This latter he decomposed, in 1877, into benzoic acid and so-called *pyroamaric acid*. Various homologues were obtained by varying the alcohol used as a solvent for the potash, and pyroamaric acid was shown to be a benzyl-ethyl-benzoic acid. One of his later investigations showed the peculiar property possessed by zinc of regenerating hydrocarbons from the solutions of their addition compounds by extracting the halogens from the latter.

The researches published by Zinin during the latter portion of his career, while marked by careful study and minute elaboration, lack much of that originality and generality of application characteristic of his earlier discoveries. As contributions to the development of the use of reducing agents in organic chemistry, they occupy, however, an important place in the annals of the science, while the *ensemble* of reactions and derivatives of the benzoïn group forms one of the important sections of the chemistry of the aromatic series.

Prof. Zinin's merits were warmly appreciated in his own country, and he was the recipient of numerous decorations, some of which were due to the important services rendered by him in the solution of questions connected with the Russian military department. In 1855 he was elected to the Imperial Academy of Sciences at St. Petersburg. He was the only Russian among the corresponding members of the Chemical Section of the French Academy of Sciences, and was likewise one of the few honorary members of the London Chemical Society and of the German Chemical Society.

T. H. N.

WILHELM PHILIPP SCHIMPER

PROF. SCHIMPER, to whose death at Strassburg on March 20 we have already alluded, was one of the most prominent scientific men in Alsace. He was born, January 8, 1808, at Dosenheim, near Elsass-Zabern. After taking a course of theological studies at the University of Strassburg, he devoted his attention to natural history. A period of travel was succeeded by his appointment in 1835 as assistant in the Natural History Museum at Strassburg. In 1839 he became director of the establishment, and was elected Professor of Geology and Mineralogy in the University. Before this date he had already attracted attention in the botanical world by his studies on mosses, and he soon became one of the leading authorities on this branch. A monument of his work as a specialist is left in his famous "*Bryologia Europæa*," which appeared in six volumes with 640 plates, from 1836 to 1855; and was provided with an extensive supplement in 1866. Other well-known important works in this connection are his "*Recherches anatomiques et morphologiques sur les Mousses*" (1850), "*Mémoire pour servir à l'histoire Naturelle des Sphagnum*" (1854), and "*Synopsis muscorum europæorum*" (1860; 2nd edit. 1876). As a palæontologist Schimper has produced—1869-1874—a "*Traité de Paléontologie végétale*," in three volumes, which ranks among the best text-books on the subject. Much of his attention and time was directed to the rich fossil remains of Alsace itself, and it is to these studies that we owe the valuable monographs, "*Plantes fossiles des Vosges*," written in 1844 in connection with A. Mougeot; "*Palæontologica Alsatica*" (1854); and "*Le Terrain de transition des Vosges*" (1862). The marked talent for botany in the Schimper family is something unusual; Prof. Schimper's two cousins having gained, like himself, honoured places in the annals of the science. Karl Schimper, who taught at Munich and Heidelberg, and died in 1867, was distinguished as the founder of the modern theory on the position of leaves, so ably expanded

by the late Prof. Braun; while Wilhelm Schimper has widely increased our knowledge of African flora by his researches in Abyssinia, where he was released from imprisonment by the English expedition in 1868.

NOTES

MM. W. DE FONVIELLE and D. LONTIN described to the Paris Academy last week a magnetic gyroscope, the object of which is to give a movement of rotation to movable pieces of soft iron of various forms. M. de Fonvielle is at present in London with the apparatus, from which some very curious results have been obtained. We hope to give a full account of the invention, with illustrations, in our next number.

M. B. BRUNET has presented the sum of 20,000 francs to the French Association for the Advancement of Science, the interest to be distributed annually for the promotion of scientific research.

AMONG recent deaths announced are those of Dr. Joh. Eman. Zellerstedt, the Swedish bryologist; Dr. M. A. F. Prestel, of Emden, the meteorologist; and Dr. Mulder Bosgoed, of Rotterdam, author of a "*Bibliotheca ichthyologica et piscatoria*."

THE French Academy of Sciences numbers seventy-eight. At present two seats are vacant: one in the section of mechanics and one in that of geography and navigation. The number of foreign associates and corresponding members allowed by the statutes is 108. There are now four vacancies: two in the chemical section, one in the botanical, and one in that of geography and navigation. The classification of this portion of the Academy by nationalities affords an interesting view of the judgment of Parisian scientific men on their *confrères* according to "geographical distribution." France, outside of Paris, heads the list with 30 members; then follow Great Britain, 21; Germany, 17; United States, 8; Russia, 6; Switzerland, 6; Scandinavian countries, 5; Italy, 4; Belgium and Holland, 4; Austria, 2, and Brazil, 1.

IN a letter in yesterday's *Times*, deserving the serious attention of those in authority, Mr. Merrifield strongly advocates the appointment of an independent commission for inquiry into the whole question of the construction of our heavy guns. Mr. Merrifield seeks to show that the system at present in use is accompanied with the most serious disadvantages.

A PROSPECTUS has been issued by the Wilts and Hants Agricultural College, of which we spoke last week. Every arrangement has apparently been made for the improvement and comfort of students.

IN a paper in the *Journal* of the Royal Society of New South Wales, on the Forests of Tasmania, by the Rev. J. E. Tenison Woods, the author gives some interesting data as to the probable age of the stately trees which people these forests. Judging from their size one would be inclined to attribute to them great antiquity. Mr. Woods was very anxious to collect data on the subject; but to nearly all his inquiries he only received mere guesses: from 200 to 300 years was the general reply. Mr. R. Hill, the proprietor of an extensive saw-mill at Honeywood, on the Huon, gave him, however, some more trustworthy data. Mr. Hill assured Mr. Wood that some of the gum-trees, and perhaps all of them, shed their bark twice in the year. The stringy bark (*E. obliqua*) is one of the most striking instances of this. He further informed Mr. Woods that, hearing a lecture from Mr. Bicheno on the growth of trees, and the statement that a ring of wood was added to the diameter each year of growth, he was induced to test the truth of this. There was a blue gum-tree in his garden in Hobart Town, the age of which he was sure of, as his brother had planted it eighteen years previously. He felled it and counted the rings, and found them to be thirty-six in number, or

two for every year. From this, and from shedding the bark as described, and a long series of observations, he concludes that the sap rises twice in the year. He has for many years watched the growth of the trees, and he believes that for the first twenty years the average growth is about one inch in diameter for each year. Out of thousands of trees felled or cut in his mill, he has not found one over seventy-five years old, and a very large proportion of the serviceable timber is composed of trees about fifty years of age. Quite recently he has had a very interesting opportunity of verifying these observations. At Ladies' Bay (between Port Esperance and Southport), a paddock on the farm of Mr. D. Rafton was cleared for the purposes of cultivation. It was exactly sixteen years in 1877-78, since a crop was taken off it, and was quite overgrown with saplings, which were all cut down. Mr. Hill, at Mr. Wood's request, wrote to Mr. Rafton, requesting him to examine the stumps. In his reply he gives the number of rings in the longest saplings as thirty-three; size across the heart-wood where the rings cease one inch. The rings he observed were not an equal distance from each other, some of them being three times the size of the others. From these facts Mr. Woods thinks we may safely adopt Mr. Hill's conclusion that there are two rings of growth for each year, and that the tallest trees of the forest, the giant timber of Tasmania, range from fifty to seventy-five years old.

WE take the following item of Yankee ingenuity from *Industry*, commending it to the attention of the Guilds' Technical Institute:—The Bridgeport *News* very cleverly describes an invention, credited to a Bridgeport Yankee, to prevent marketmen from palming off old eggs for fresh ones. The inventor proposes to arrange a rubber stamp in the nest of every hen, with a movable date. This stamp is arranged with a pad that is saturated in indelible ink. When the hen lays an egg, as is well known, she kicks slightly with her hind leg. An electric disk is arranged so that her foot touches it, and the stamp turns over on the ink pad, and then revolves, stamping the date on the egg. The hen then goes off about her business, the farmer's hired girl removes the egg and replaces the stamp, which is then ready for another. On each evening, after the hens have retired to their downy roost with the roosters, the date of the stamp is altered for the next day, and the work goes on. In this way there can be no cheating. You may go to the grocery and ask for fresh eggs, and the grocery man tells you he has some eggs of the vintage of January 29, 1880, for instance. You look at them, and there are the figures, which cannot lie.

THE *Illustrated Scientific News* of New York describes and pictures a remarkable meteorite in the collection of Prof. W. E. Hidden, of the New York Academy of Sciences. It was found, July 19, 1879, on a plantation at Lick Creek, Davison Co., N. Carolina. When found it was covered with a thick scaly crust of oxide. It weighs 1·24 kilos., or 43¾ ounces avoirdupois. It is one of the rare class that does not show the Widmanstätten figures or lines indicating the characteristic crystalline structure of meteoric irons. A thorough analysis in duplicate of the specimen is now being made. Mr. Hidden has in his cabinet three other undescribed meteorites from the Southern States, which will be noticed in due time. One of these weighs 14½ kilos, or 32¼ ounces avoirdupois.

PROF. SILVESTRIA, of the Catania Observatory, the *Times* Paris correspondent states, reports the fall on the night of March 29 of a shower of meteoric dust, mingled with rain. Besides the usual characteristics of colour, chemical composition, and the mixture of mineral and organic particles and minute infusoria, there was a considerable proportion of iron, either in a purely metallic state or in metallic particles, coated with oxide. The size varied from a tenth to a hundredth part of a millimetre, and the form was either irregular or spherical, as if it had undergone

fusion. This phenomenon, according to the correspondent, was first observed in the Indian Ocean, south of Java, in 1859, and has been corroborated by Prof. Nordenskjöld's Arctic observations.

MR. HUGH O'DONOGHUE McCANN, of Bedford School, has been elected to an Open Scholarship for Natural Science at Queen's College, Oxford. The scholarship is tenable for five years, and is of the annual value of 90*l*. There were only two candidates.

ON Tuesday next, April 20, Mr. Robt. H. Scott will give the first of a course of four lectures at the Royal Institution on Wind and Weather.

THE 60th *Ergänzungsheft* of *Petermann's Mittheilungen* consists of an elaborate monograph on the Sea-Fisheries of the World, by Moritz Lindemann.

THE Medical men of New South Wales have decided to form there a branch of the British Medical Association.

WE have received a very favourable report of the progress and present condition of the City Industrial Museum of Glasgow.

A TERRIBLE cyclone occurred, the *Sydney Morning Herald* states, in New Caledonia and the Society Islands on January 24, resulting, so far as is known, in the loss of fourteen vessels in the vicinity of Noumea and the death of sixteen persons. In Noumea and its suburbs the amount of damage done was incalculable. It was certified by old colonists that there was never so severe a hurricane in those regions, or one which caused so much loss. The plantations up the country were destroyed and trees were uprooted or bereft of their branches. In many parts of the town, especially near the wharf, the eye was arrested in all directions by heaps of ruin. During the storm the harbour was completely invisible, owing to the thick fog caused by the rain and the spray of the waves being dashed about by the force of the wind. All the small boats were wrenched from their anchors and swept on to the piers. At sea the disasters were numerous; no fewer than fourteen vessels either sank or were thrown on some distant coast.

WITH the aid of an improved lantern for the oxyhydrogen light, invented by Mr. Holman, of the Franklin Institute, Mr. Outerbridge, Jun., lecturing lately to the Institute on "Coins and Coinage," made some interesting experiments, projecting enlarged images of ancient and modern coins on the screen with great sharpness and brilliancy, and showing the cupellation of gold and silver. In this latter a little "cupel" or crucible of calcined bone-ash was held in the focus of the condensing lens by means of a ring of thick copper wire, and its image appeared on the screen much enlarged. The cupel was then heated white-hot with an oxyhydrogen blowpipe. A weighed sample of gold alloy containing base metal was inclosed in an envelope of sheet lead pressed into the form of a bullet; this was dropped into the cupel, and was immediately melted. As the lead became oxidised it was gradually absorbed in the cupel, forming a dark ring at the bottom. A little sheet of light was noticed moving over the surface of the molten metal as the precious metal became exposed; then, at the moment when the lead was completely absorbed, carrying with it all the base metal of the alloy, the purified precious metal became visible as a brilliant globule, reflecting the light like a mirror.

THE Leadville *Herald* reports, on the authority of "a gentleman who has, during the past two years, traversed the mountains in the vicinity of Leadville, and penetrated almost every one of their recesses," the fact of the existence of a veritable glacier, presenting all the characteristics of the Swiss glaciers, both in magnitude and motion, within twenty-five miles of that city. When

first discovered several years ago, the report affirms, it was nearly a mile in length, and at the bottom of the "gulch" presented a sheer precipice of ice about 150 feet in height. Later in the season it had been considerably reduced both in length and bulk; but earlier in the following year it had regained first dimensions. The rocks on the sides of this immense mass of moving ice are said to show all the characteristic signs of glacier action. The location of this interesting natural curiosity is said to be in the Mosquito Range, about fifteen miles north of the Pass; and, being very inaccessible and out of the ordinary line of travel, the fact of its being discovered at this late day is accounted for.

THE experiment of sending up three connected balloons will be tried in Lille at the end of next May. The balloons are now fitting in the vestibule of the Palais de l'Industrie of the Champ de Mars, Paris; there will at the same time be a descent in a parachute by M. Tavis.

M. YON, one of the administrators of the Paris Captive Balloon, is publishing a pamphlet on the construction of a new directing balloon, devised on the plan worked out by M. Giffard in his great experiment executed at Paris in 1852. The only difference is that the motive screws are two, and placed laterally and attached to the ring. A captive balloon fitted up according to the principles practised so successfully by M. Giffard in Paris and in London is being constructed now at Brussels, in the vicinity of the next national exhibition, which will be opened on June 19 to celebrate the fiftieth anniversary of Belgian independence. The number of exhibitors amounts to 6,000, so that an exceedingly fair specimen will be offered to the world of Belgian resources and industry.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*) from West Africa, presented by Mr. L. Samuel; a Garnett's Galago (*Galago garnetti*) from East Africa, a Marsh Ichneumon (*Herpestes paludosus*) from South Africa, presented by Mr. A. Chirnside; an African Civet Cat (*Viverra civetta*) from Africa, presented by Mr. P. Lembery; a Banded Ichneumon (*Herpestes fasciatus*) from West Africa, presented by Mr. A. Ferris; a Common Jay (*Garrulus glandarius*), British, presented by Mrs. A. Dutton; two Graceful Ground Doves (*Geopelia cuneata*) from Australia, deposited; a Black Saki (*Pithecia satanas*) from the Lower Amazons, a Cape Hyrax (*Hyrax capensis*), a Robben Island Snake (*Coronella phocorum*) from South Africa, a Great-billed Rhea (*Rhea macrorhyncha*) from South America, purchased; an Amherst Pheasant (*Thaumalea amherstiae*) from Szechuen, China, received in exchange.

OUR ASTRONOMICAL COLUMN

THE SOUTHERN COMET.—Dr. Gould, Director of the Observatory at Cordoba, has addressed to Prof. Peters of Kiel an interesting letter with observations of the great southern comet. The tail was seen at Cordoba on January 31. Two evenings later, when Dr. Gould first perceived it, the length was certainly 35°. Careful drawings of its position amongst the stars were made independently by two observers until February 14, after which it had not been distinguishable; it was then not less than 37° in length, but was seen with difficulty, and was scarcely brighter near the head than at its extremity. Even at greatest brilliancy about February 7, its light was nowhere superior to that of the Milky Way in Taurus. Dr. Gould states that from the first no nucleus had been discernible in the telescope, the head always appearing "cloud-like and filmy, and elongated in the direction of the tail, which it did not very much surpass in brilliancy;" indeed "the inordinate length of the tail and the great faintness of both tail and head" were very remarkable features in the appearance of the comet. Observations for position were obtained on six evenings between February 6 and 15, which have enabled Dr. Gould to claim priority in pointing out the probable identity of this comet with

the great comet of 1843. Calculating from the observations on February 6, 9, and 12, he deduced the following first approximation to the elements:—

Perihelion passage, January 27.4185 M.T. at Washington.

Longitude of perihelion	280° 26' 59"
" ascending node	7 50 28
Inclination	35 5 30
Logarithm of perihelion distance	7.719160
Motion—retrograde.	

So that, he remarks, the perihelion distance given by this first rough approximation is such that the comet's centre of gravity would have passed at a distance from the solar surface equal to only one-eighth of the sun's own radius.

Dr. Gould also refers to the discussion which took place in 1843 as to the possible identity of the comet of that year with the one observed in southern latitudes in 1668, and concludes:—"Although Hubbard's discussion shows that the observations of 1843 can be best represented by an ellipse of more than 500 years, and although the intervals of 175 years between 1668 and 1843, and 37 years from the perihelion of 1843 to the present time, are not commensurable, still this argument against identity does not seem very forcible."

The "Argus Summary for Europe," published at Melbourne on February 19, contains three positions of the comet, communicated from the Observatory, which are as follow:—

	Right Ascension.	Declination.
	h. m. s.	° ' "
Feb. 9 at 9 p.m.	23 41 14.5	— 33 43 52
10 at 9 p.m.	23 58 23.0	— 33 44 58
14 at 9 p.m.	1 2 15.6	— 33 21 7

These places are termed approximate, and on comparing with the positions received from Dr. Gould and Mr. Gill's rough ones, it is evident that the declination of February 14 has been misprinted, and should be — 32° 21' 7". It is stated that on this date the nucleus had become very faint, and "even with the great telescope the tail could only be seen as a thin wisp extending eastwards from the head for a couple of degrees. The head itself appeared simply as a faint nebulous mass with a slight central condensation." Beyond the fact that the comet had passed the perihelion and was rapidly receding from us, nothing definite appears to have been known of the orbit at Melbourne up to February 19, and it is clear that at the Cape up to February 24 its similarity to that of the comet of 1843 had not been remarked, the elements which we have published from Mr. Finlay being entirely different. So that, as we have remarked, it is probable that Dr. Gould has priority in drawing attention to one of the most striking facts connected with the periodicity of comets.

From the first approximate position determined at Cordoba, and the Melbourne observations of February 9 and 14, Mr. Hind has calculated the following orbit, which still further adds to the probability of the identity of the great comets of 1843 and 1880:—

Perihelion passage, January 27.5272, M.T. at Greenwich.

Longitude of perihelion	278° 37'
" ascending node	0 57'
Inclination	36 9'
Logarithm of perihelion distance	7.81749
Motion—retrograde.	

Prof. Winnecke also has found that the elements of 1843 represent, with very trifling differences, Dr. Gould's place of February 4 and Mr. Gill's rough positions of February 10–15, and thinks there can hardly be a doubt that the bodies are identical.

PHYSICAL NOTES

M. PAUL BERT lately described a tele-microphone to the Académie des Sciences of Paris. The instrument thus denominated differs only in detail of construction from a form of microphone publicly described eighteen months ago in England. The transmitter of the telemicrophone consists of a tolerably thick disk of ebonised rubber, suitably mounted, to the centre of which one of the carbons is attached; the other carbon is kept lightly in contact with it with a pressure which can be adjusted by magnetic means, a small armature of iron being affixed to it, to which